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(54) **GRASPING VIRTUAL OBJECTS IN AUGMENTED REALITY**

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(57) **ABSTRACT**

An augmented reality system which enables grasping of virtual objects is described such as to stack virtual cubes or to manipulate virtual objects in other ways. In various embodiments a user's hand or another real object is tracked in an augmented reality environment. In examples, the shape of the tracked real object is approximated using at least two different types of particles and the virtual objects are updated according to simulated forces exerted between the augmented reality environment and at least some of the particles. In various embodiments 3D positions of a first one of the types of particles, kinematic particles, are updated according to the tracked real object; and passive particles move with linked kinematic particles without penetrating virtual objects. In some examples a real-time optic flow process is used to track motion of the real object.